

REMARKS

Applicants appreciate Examiner's thorough review of the application. One drawing has been amended to correct an incorrect reference number. Claims 9, 21 38 and 45 have been amended to address Examiner's concerns. No new material has been added. Reconsideration of 5 the application is respectfully requested.

To assist in reviewing Applicants' response: where Applicants have quoted Examiner's office action, the quoted material is single-spaced and indented and Applicants' response to Examiner's concerns is in bold print.

Under "Claim Rejections – 35 U.S.C. §112" of the office action, Examiner states:

10 Claims 9-21 (sic 12), 21-24 and 38 are rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

15 A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex Parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language.

20 The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex Parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex Parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex Parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 9, 21 and 38 recite the broad recitation "second structure is permitted to touch at least one wicket gate in at least one position," and the claim also recites "preferably in the region of said leading edge of said wicket gate" which is the narrower statement of the limitation.

30 To address Examiner's concerns, Applicants have amended Claim 9, (upon which Claims 10 and 11 depend, Claim 12 depending on Claim 10); amended Claim 21 (upon which Claims 22 and 23 depend, Claim 24 depending on Claim 22); amended Claim 38, and amended Claim 45 which 35 appeared to have the same § 112 concern even though not specifically noted by Examiner.

Under "Claim Rejections – 35 U.S.C. §102" of the office action, Examiner quotes § 102

(b) and states:

40 Claims 1, 2, 7, 25, 26 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Delonge (U. S. patent no. 5,472,314).

Delonge discloses a stay vane (fig. 2) for use with a turbine configuration having components, comprising:

5 a first structure (parts 1 and 3), incorporating a leading edge (1) and a trailing edge (edge 29 of 3) with respect to a fluid inlet to the turbine configuration wherein the first structure supports said turbine configuration at least in part; and

10 a second structure (2) affixed to the trailing edge of said first structure, wherein the second structure improves hydraulic performance of said turbine configuration by complementing at least one component of said turbine configuration.

Regarding claim 2, Delonge discloses a stay vane with at least one connector (col. 6, lines 47-60) for affixing said second structure to the trailing edge of said first structure.

15 Regarding claim 7, Delonge discloses a stay vane in which the second structure is affixed to the trailing edge of said first structure by chemically bonding (col 7, lines 47-60)

20 Regarding claim 25, Delonge discloses an extension incorporated in a turbine configuration having components to include a first structure (1 and 3) supporting the turbine configuration at least in part,

25 a first structure incorporating a leading edge (1) and a trailing edge (3) with respect to a fluid inlet to said turbine configuration, the extension comprising:

30 a second structure (2) affixed to the trailing edge of the first structure, wherein the extension improves hydraulic performance of said turbine configuration by complementing at least one said component of said turbine configuration.

Regarding claim 26, Delonge discloses the extension has least (sic) one connector (col. 6 lines 47-60) for affixing said second structure to said trailing edge of said first structure.

35 Regarding claim 29, Delonge discloses the second structure is affixed to the first structure by chemically bonding (col. lines 47-60).

Applicants respectfully disagree with Examiner's characterization of the "vanes" of Delong et al. The "stay vanes" of Applicants' invention are unlike the vanes of Delong et al. in that the stay vanes, as their name implies, are inflexible throughout their length except for the short extension as described for certain embodiments. A turbine used on an aircraft engine spins much faster and has a much different flow regime from a turbine used on a dam. A definition of "stay vane" as used in Applicants' invention may be found on the Internet at www.hydro.mb.ca/our_facilities/build_gen_station/glossary.html

40 and is provided here for convenience:

Fixed metal vanes fitted to the inner periphery of the scroll case that guide the water from the scroll case to the turbine runner. The fixed vanes also transmit

the load of the turbine pit, weight of the hydro-generator parts, etc. to the foundation. (emphasis added)

Thus the camber of Applicants' invention is not variable as is that of Delong et al. (Title and Abstract). For example, Delong et al. indicates three separate movable, not 5 fixed, members in any of its vanes stating in the Abstract:

A variable camber vane for a turbomachine comprises *leading and trailing edge parts*, at least one of which is *pivotal* relative to the other, and a *resilient joining part* inserted into a space provided between the leading and trailing edge parts... (emphasis added)

10 The inflexible (except for some embodiments of the short extension) stay vanes of Applicants' invention could not work as designed to support structure if they flexed all along their length. See p. 1, lines 21-23:

15 Turbines used to transform the associated hydrostatic head into electric power are designed with cascades, each comprising a *fixed* stay vane and an adjustable valve, termed a wicket gate. (emphasis added)

Further, Delong et al. do not characterize their vanes as "stay vanes." See Col. 1, lines 8-9:

20 The invention relates to *variable camber vanes* used in turbomachines, particularly turbine engines for aircraft. (emphasis added)

25 The Delong et al. vanes, much like the wicket gates (valves) that are used in Applicants' invention (but have no place in aircraft turbine engines), are not only movable, but are designed to both move and articulate, being constructed of multiple hinged parts (Fig. 1). Thus arguments made as to the Delong et al. aircraft turbine "vanes" do not apply to the fixed stay vanes of Applicants' invention. Further, although 30 Applicants' wicket gates are airfoil shaped, the flow of fluid is "nose" on (Fig. 2B) compared to that of Delong et al. with flowing coming from the underside (intrados) of the air-foil shaped stay vanes (Fig. 1 and Col. 2, lines 12-15). Thus, any use of Delong et al. as § 102(b) prior art is mis-directed.

Examiner further states:

35 Claims 1, 2, 7, 25, 26 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Hagle et al. (U. S. patent no. 5,207,558).

Hagle et al. discloses a stay vane for use with a turbine configuration having components, comprising:

5 a first structure (26), incorporating a leading edge and a trailing edge with respect to a fluid inlet to the turbine configuration wherein the first structure supports said turbine configuration at least in part; and

10 5 a second structure (24) affixed to the trailing edge of said first structure, wherein the second structure improves hydraulic performance of said turbine configuration by complementing at least one component of said turbine configuration.

15 10 Regarding claim 2, Hagle et al. discloses a stay vane with at least one connector (hinge pin 34, col. 3, lines 6-16) for affixing said second structure to the trailing edge of said first structure.

20 15 Regarding claim 7, Hagle et al. discloses a stay vane in which the second structure is affixed to said trailing edge of said first structure by mechanically bonding (col 3, lines 6-16).

25 20 Regarding claim 25, Hagle et al. discloses an extension incorporated in a turbine configuration having components to include a first structure supporting said turbine configuration at least in part,

30 25 a first structure (26) incorporating a leading edge and a trailing edge with respect to a fluid inlet to said turbine configuration, said extension comprising:

35 30 a second structure (24) affixed to the trailing edge of said first structure, wherein the extension improves hydraulic performance of said turbine configuration by complementing at least one said component of said turbine configuration.

40 35 Regarding claim 26, Hagle et al. discloses the extension has least (sic) one connector for affixing said second structure to said trailing edge of said first structure (col 3, lines 6-16).

45 40 Regarding claim 29, Hagle et al. discloses the second structure is affixed to the first structure by any method consisting of mechanically (sic) (col. 3 lines 6-16).

50 45 **Applicants respectfully disagree with Examiner's characterization of the "vanes" of Hagle et al. The "stay vanes" of Applicants' invention are unlike the vanes of Hagle et al. in that the stay vanes, as their name implies, are immovable. See p. 1, lines 21-23:**

55 50 Turbines used to transform the associated hydrostatic head into electric power are designed with cascades, each comprising a *fixed* stay vane and an adjustable valve, termed a wicket gate. (emphasis added)

60 55 Refer also to arguments above as relate to the Delong et al. invention. Further, Hagle et al. do not characterize their vanes as "stay vanes." See Col. 2, lines 26-30:

65 60 The air-foil shaped cross sectional outline of the prior art vanes 12 and their overlapping arrangement, is similar to the vanes 16 of the present invention shown in Fig. 2. There the similarity ends as the vanes 16 of the invention are *not entirely fixedly mounted* as discussed below. (emphasis added)

The Hagle et al. vanes, much like the wicket gates (valves) that may be used in Applicants' invention, are not only movable, but are designed to both move and articulate, being constructed of multiple hinged parts (Fig. 2). Thus arguments made as to the Hagle et al. "vanes" do not apply to the *fixed* stay vanes of Applicants' invention. Further, 5 although Applicants' wicket gates are airfoil shaped, the flow of fluid is "nose" on (Fig. 2B) compared to that of Hagle et al. with flowing coming from the underside of the air-foil shaped stay vanes (Fig. 2). Thus, any use of Hagle et al. as § 102(b) prior art is mis-directed.

In the paragraph entitled "Prior Art," Examiner states:

10 The patent to Fisher, Jr. et al. (U. S. patent no. 6,254,339) was cited for its teaching of a hydraulic turbine with extensions on the turbine blades, but no extensions on stay vanes or wicket gates.

15 The patent to Oueliet (U. S. patent no. 5,126,584) was cited for its teaching of a wind mill with the equivalent of stay vanes and wicket gates without extensions.

20 The patent to Buchelt (U. S. patent no. 6,007,297) was cited for its teaching of a pivoting wicket gate (Fig. 2).

The patent to Beyer et al. (U. S. patent no. 5,924,842) was cited for its teaching of a hydraulic turbine with stay vanes and wicket gates, with the extensions on the trailing edge of the wicket gate (400, Fig. 23).

Applicants have noted the researched prior art.

In the paragraph entitled "Allowable Subject Matter," Examiner states:

25 Claims 13-20, 37 and 39-53 are allowed.

Claims 9-12, 21-24 and 38 would be allowed if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in the Office action and to include all of the limitations of the base claim and any intervening claims.

30 Claims 3-6, 9-12, 27-28 and 30-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

35 **Applicants have noted Allowable Subject Matter and have amended Claims 9, 21, 38 and 45 to address Examiner's § 112 concerns. As reviewed above, comparing an aircraft turbine's movable/variable "vanes" to the fixed "stay vanes" that are part of the**

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supporting structure of a hydraulic turbine is inappropriate and Applicants' other claims are valid as stated.

No new matter has been entered via this amendment. In view of the foregoing, it is respectfully requested that the subject application be passed to issue as amended hereby with 5 currently amended Claims 9, 21, 38 and 45 and original Claims 1-8, 10-20, 22-37, 39-44 and 46-53.

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Respectfully Submitted,

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AMENDMENTS TO THE DRAWINGS

Amend Fig. 2A as shown to correctly label the extension as 100 vice 101.

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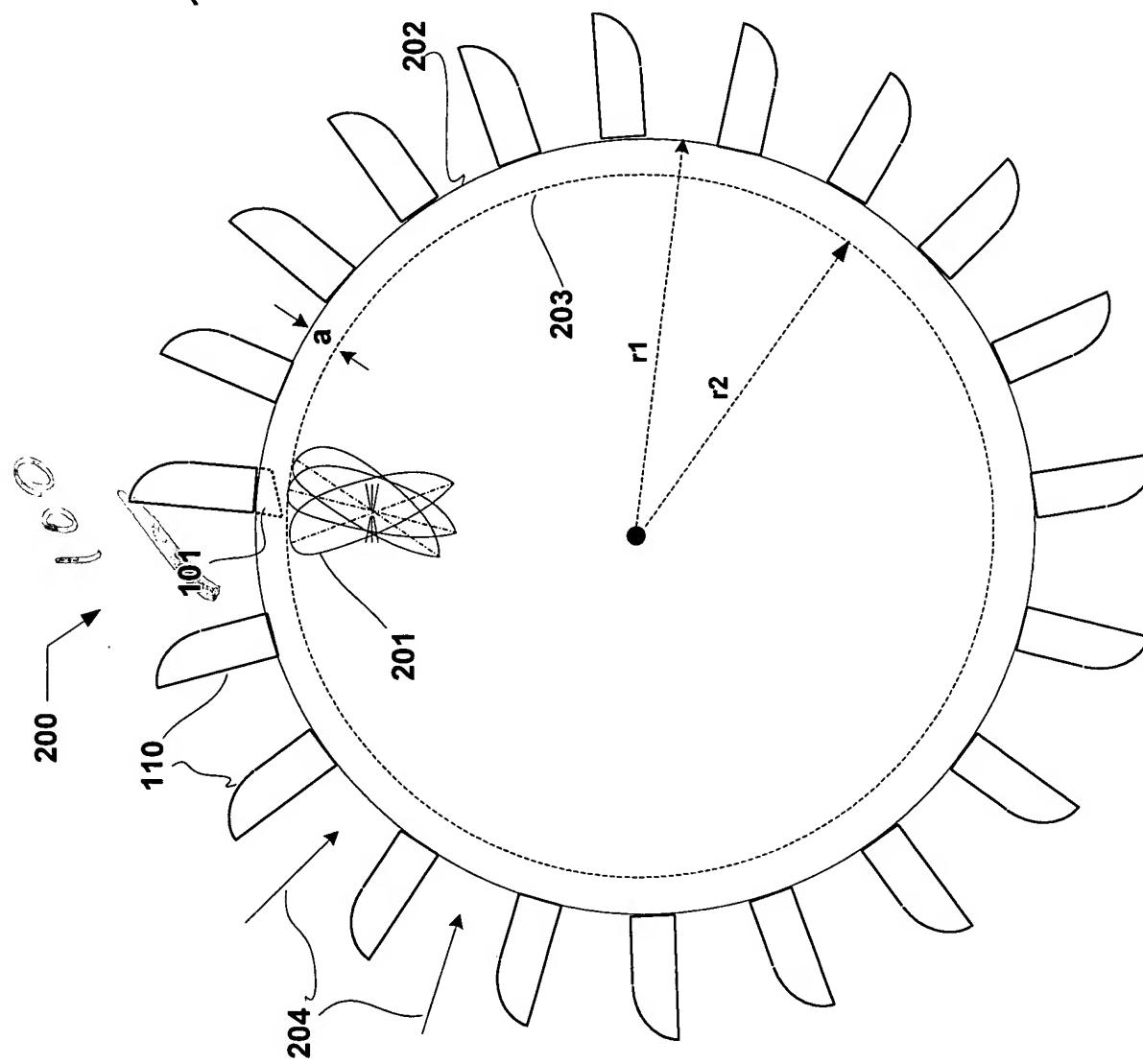


Fig. 2A

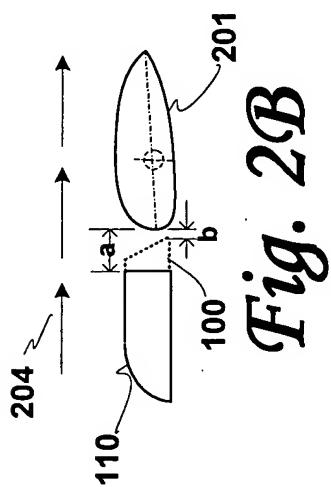


Fig. 2B

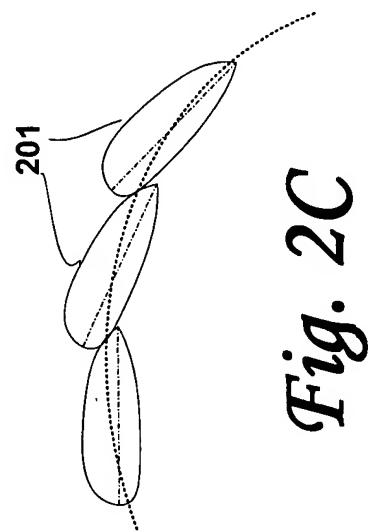


Fig. 2C